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THE RELATIONAL THEORY OF CONSCIOUSNESS AND ITS REALISTIC IMPLICATIONS

ONE needs not to be a disciple either of Hegel or of Comte to recognize that there has been, in the methodology of the special sciences and in that of science as a whole, a certain historical procession or evolution of concepts, which has proceeded somewhat along the lines described by Ludwig Stein in an article printed in the *Archiv für Systematische Philosophie*, August, 1903, entitled 'Der Neo-Idealismus unserer Tage.'

In our first efforts to understand a thing we are apt to seize upon its most interesting and important characteristic, and attempt to explain its behavior in terms of that. The property thus singled out is felt to be the essence or substance of the thing, the other properties are thought of as accidents or attributes which are in some way supported by it. This is the first stage in the development of methodological concepts, the stage of definition, working by the category of *Substance*.

Sooner or later we realize the inadequacy of this attitude. The property which seemed from one point of view to be essential is from other points of view found to be less important, less worthy to constitute the true nature of the thing than the group of properties which were regarded as mere accidents. This discovery leads us to treat the object as a complex of qualities, none of them worthy to be called substance, but each worthy of investigation as a phenomenon. This is the second stage of methodological development, the stage of empirical description and analysis, working by the category of *Quality* or *State*.

But, as before we found that the substance or essence of a thing depended upon its attributes, so now we find that the attributes do not themselves determine the times and places of their occurrence, but depend in their turn upon the relations between other objects. We thus attain the third and final stage of scientific method, the stages of prediction and explanation, in which each object of study is viewed under the category of *Relation*. This method of *correlat-*

ing every phenomenon with a conditioning relation subsisting between other phenomena enables us to pass from one part of reality to another, and to bring together all discrete objects in the substitutional continuum of knowledge. The current view of the physical world as a mechanism or nexus of spatio-temporal relations, of which all the qualities, whether essential or accidental, between which the relations subsist are viewed as symbols of one another, is the general outcome and the most striking illustration of our third stage of methodological evolution. But, in the progress of special branches of physical science, the final triumph of the relational method is equally obvious. Light and heat, for example, which were first viewed as occult substances, and later analyzed and described in terms of their various manifestations, are now finally correlated with the relations of motion which accompany them, and which determine the time, place and degree of their occurrence. In the same way, the movement of the planets at first ascribed to quasi-personal essences by the scholastics, and, second, described and analyzed by Keppler, was, thirdly, scientifically or predictively explained in relational terms by Newton. It is of course true that some of the sciences have been unable fully to realize the relational ideal. In biology, for example, while we no longer regard life as an occult substance or force, we are still in large measure limited to the analysis and classification of its phenomena; we are as yet unable adequately to explain life, *i. e.*, to express it as a relation or function of other things. But the ideal of the biologist is, I take it, the same as the ideal of other scientists. And he would be glad to correlate vital phenomena with some particular type of spatio-temporal relation for the same reason that the physicist is glad to correlate a color or a tone with a definite rate of oscillation.

So far we have been considering the methodology of the physical sciences, the study of the objects of consciousness. We have seen that in that field of study the category of substance has given rise to the category of quality, which has in its turn made way for the category of relation. When we turn to the psychological study of consciousness itself, as the phenomenon of *awareness*, we might expect perhaps to find a similar methodological development. To a very limited extent such an expectation would be fulfilled. Descartes, Spinoza and Leibniz do in a measure represent in their several conceptions of consciousness the three stages and categories which we have been considering. For Descartes consciousness is a substance, for Spinoza it is a series or complex of qualities corresponding point tc point with the physical series, while for Leibniz consciousness is a relation. In a remarkable passage in the *Monadology*, Leibniz ex-

plains the conscious or apperceptive state of a monad as consisting in the organization in the monad of its *petits perceptions* with regard to some one of them as a center. As the world organized with reference to some one of its points is a monad or substance, so the monad organized with reference to one of its qualities is consciousness. Thus mind and world, consciousness and unconsciousness, are not, as with Descartes, different substances, nor, as with Spinoza, different attributes or qualities. They are of the same substance and the same qualities, their difference is entirely a difference of relation. It is a matter of regret that the relational theory of consciousness thus clearly formulated by Leibniz should have been so bound up with his peculiar metaphysical views that it failed to gain any notable recognition or development at the hands of his successors. And what applies to Leibniz in this matter applies equally to Herbart. For Herbart, too, developed a relational view of consciousness, which, like the Leibnizian view, failed to gain general acceptance by reason of the metaphysical doctrines with which it was entangled. In fact, modern conceptions of consciousness have been dominated almost entirely by the more primitive attitudes of Descartes and Spinoza. In both England and Germany consciousness has been treated as a substance in which the apparently independent objects of the experienced world inhered as dependent states or 'ideas,' which is the attitude of Locke and Berkeley no less than of Kant and Fichte. Or else, after the manner of Spinoza, consciousness has been conceived as a series of purely secondary qualities, running parallel to the stream of purely primary qualities supposed to constitute the material world. For the first or Cartesian view interaction is at once a necessity and an impossibility, while in the second or Spinozistic conception all the artificialities of parallelism are inevitably implied. In short, we do not find in the history of the science of consciousness that abandonment of the categories of substance and state and that definite adoption of the category of relation which are so manifest in the history of the objective sciences. And if it be admitted that progress in physical science has been nearly proportional to the degree to which the relational or mechanical ideal has been accepted, we might infer that the relatively backward state of psychology is due, not so much to the intrinsic difficulties of its subject-matter, as to its persistent use of methodological categories which are elsewhere outworn and discredited.

In view of this general situation it is encouraging to note that within a comparatively recent time several writers have inaugurated a movement to put consciousness on a par with other objects of study,

by investigating it under the category of Relation. Mach in Germany, Bawden, James and Woodbridge in America, in relative independence of one another, and in complete independence of Leibnizian and Herbartian precedents, have formulated the difference between physical and psychical as a difference of relational context rather than as a difference of substance, or a difference of quality. We must admit, however, that gratifying as these new formulations of the relational theory of consciousness undoubtedly are, most of them suffer from the taint of that very subjective and non-relational view which they are intended to replace. Mach,[1] for example, uses the term 'sensation' to denote the primary elements which are to stand as the terms both of the physical and of the psychical order of relation, thus implying that both physical and psychical are ultimately modes of the psychical. With Professor Bawden's functional view of the physical and psychical,[2] I find the same difficulty; for that view, if I understand it, would also make consciousness the ultimate reality within which the physical and psychical orders are differentiated in response to the pragmatic needs of the conscious experience itself. In the theory of Radical Empiricism, recently promulgated by Professor James,[3] there is less of subjectivism than in either of the foregoing, and yet here also the primal elements of reality are described by the psychical term 'pure experience.' Even a *pure* experience implies a consciousness of it; its *esse* depends upon *percipi*. Then again Professor James's adherence to the 'humanistic' theory of knowledge, which to many of its critics *appears* to regard axioms as postulates, and to hold that propositions owe their truth to the fact that people believe them, would seem to indicate that despite certain undeniably realistic features 'radical empiricism' is not quite free from the subjectivism of Berkeley and Hume. Professor Woodbridge's statement[4] of the relational theory stands out in contrast to the formulations thus far considered, in that it contains a recognition that objects and truths do not depend for their existence or nature upon any consciousness of them, and that they are for that reason not to be described by any such psychical terms as sensations or mental needs or pure experiences, but rather as real and independent *objects* in space and time, which are sometimes related in the continuum of consciousness and sometimes not.

[1] 'Analysis of Sensations.'

[2] 'The Necessity from the Standpoint of Scientific Method of a Reconstruction of the Ideas of the Psychical and Physical.' JOURNAL OF PHILOSOPHY, PSYCHOLOGY AND SCIENTIFIC METHODS, Vol. I., No. 3, pp. 62–68.

[3] 'Does Consciousness Exist?' *ibid.*, Vol. I., No. 18, pp. 477–491. *Cf.* also Dr. R. B. Perry's able article on 'Conceptions and Misconceptions of Consciousness.' *Psychi. Rev.* XI, pp. 282–296.

[4] 'The Nature of Consciousness,' this JOURNAL, Vol. II., No. 5, pp. 119–125.

And this brings me to what I regard as the first and fundamental implication of the relational theory of consciousness, viz., realism—a complete abandonment of the Cartesian, Berkeleian and Kantian view of the conscious self as a substance in which objects must inhere in order to be real or true. All relations presuppose the existence of terms between which they subsist. If consciousness is at length to submit to the same scientific treatment that we accord to other phenomena—*i. e.*, if it is to be equated to a mode of relation between things—it must inevitably be regarded as secondary to those things. Consciousness, in short, must be thought of as inhering in its objects rather than its objects inhering in it. In fact the new relational theory of consciousness is in every sense correlative to the old realistic theory of the objects of consciousness. If consciousness is a relation, objects of consciousness must be real independently of their standing in that relation, while conversely, if objects are real independently of a consciousness or knowledge of them, then that consciousness or knowledge can not be anything other than a relation between them.

Assuming the truth of this correlation, I shall use the terms realism and relationalism interchangeably, in the hope of making more clear the new conception of consciousness by identifying it with the more familiar realistic view. And in the remainder of my paper I wish to consider: (1) The agreement of this conception (*a*) with the instincts of common sense, and (*b*) with the facts of science; (2) the objections which have been made to the theory by idealists or non-relationists.

First, then, the relational theory is admittedly in accordance with common sense, which naturally thinks of the physical world as passing in and out of our consciousness without gain or loss of existence. Consciousness of objects is supposed to depend upon the relation of the object to our eyes, ears and skin. And it is quite impossible for an unsophisticated person to imagine that objects which pass from his field of view thereby cease to exist.

Again, the scientist, and especially the physiologist, is at one with the plain man in treating consciousness as a relation. For him, the perceiving of an object depends upon the relation of the brain to the stimulus received from the object. His realism is not, to be sure, so naïve as that of unreflective common sense, for he recognizes the personal equation—the inevitable distortion of perspective which results from having to perceive things through the imperfect media of brain and nerves. But his whole science rests on the supposition that consciousness does enlighten us as to the nature of objects, not

indeed as to what they might possibly be apart from all relations, but as to what they actually are in relation to our brain.

So much by way of a brief statement of the essential agreement of the relational theory with instinctive beliefs and with the conclusions of science. We pass now to our second point—a consideration of the arguments against conceiving consciousness as a mode of connection between the organism and its environment.

The idealists from Descartes to Fichte have urged two lines of objection. They have claimed, first, that objects of immediate perception are intuitively known to be states of the knower. To this the realist replies by denying the supposed intuition. That is to say, he denies that there is anything in his consciousness *of* objects that can be interpreted as implying their dependence *on* his consciousness. *Cogito ergo sum* is to him not a whit more certain or primary than *Cogitatur ergo est*. Consciousness appears as a purely diaphanous medium which in no way supports or alters its objects. But, secondly, the more empirically minded idealists, those, for example, of the British school, are inclined to help out the first or Cartesian argument by pointing to the dependence of perceived objects upon their relation to our sense-organs. This so-called physiological argument, which would infer a dependence of objects upon a non-physical mind by appealing to the fact that they are always perceived in relation to a physical body, is an obvious *non sequitur*. So far as I can see, all of the arguments for idealism are simply elaborations of one or the other of these two lines of appeal.

There is, however, one consideration or assumption which, though hardly to be classed as an idealistic argument, has nevertheless lent some color of validity to the paralogism just mentioned. I refer to the doctrine accepted by the majority of physicists of the subjective nature of the 'secondary qualities.' As things stand at present, the idealist can always say to his opponent: "You grant that colors, sounds and odors have no objective existence; why should you not be consistent, and grant also that the space, time and mass relations (which are inconceivable apart from these or some similarly specific qualities) are subjective also?"

Now, there are few more unjust decrees in the history of scientific legislation than the sentence of banishment from the physical world which, at the beginning of the seventeenth century, was pronounced upon the secondary qualities. As soon as the modern investigator discovered that scholastic science was fundamentally wrong in that it failed to perceive that the secondary quality or specific nature of a phenomenon was, as such, of no use in determining the time, place and intensity of its occurrence, he jumped to the conclusion that all genuine qualities were subjective.

The prime error of the scholastic philosophy of nature did not consist in 'filling space with substantial forms,' or, as we should now say, in recognizing that with every quantity, or extensive mode of energy, there is correlated a quality, or intensive mode of energy,—what the panpsychist would call a sensation. The scholastic error did not, I say, consist in the objectivization of qualities, for, panpsychism aside, we do not hesitate at the present day to fill the brain with substantial forms or, in the modern phrasing, to correlate psychical with neural processes; and if the complex phenomena of our conscious experience can be correlated with protoplasmic changes, there is no reason to suppose that simple, though equally specific, qualities are not correlated with changes in inorganic matter.[5] The real error of the scholastics lay, as we have already said, in the belief that these substantial forms or objective qualities were causally effective, and that they determined by their specific natures the times and places of their occurrence. The only way to *predict* the where and when of a thing is to find its relations to the where and when of other things. That is the mechanical theory. But, because the time and place of a thing can only be scientifically expressed as a function of other relations of time and place, it by no means follows that times and places are empty or void of specific natures, and that the physical world is a set of relations without terms, of primary qualities without secondary qualities.

Air waves stimulate the auditory nerve, and sound is manifested; hydrogen unites with oxygen, and water is manifested—a substance differing from its components both in primary and in secondary qualities. Yet we do not hold that water is subjective and hydrogen and oxygen objective. Why should we hold that sound is more subjective than water? Like every object, the secondary quality depends for its manifestation upon the relations of other objects. But this observable dependence of sensible objects upon physical and physiological relations does not imply an unobservable dependence upon consciousness.

I would call special attention to the status of the secondary qualities in connection with the relational theory, for the following reason: As long as the secondary qualities are accepted as objectively real there is no temptation to regard consciousness as anything *but* a relation. The physical world is a self-supporting system if it

[5] The distinctive function of protoplasm may consist, not in creating new qualities, but in giving a new relational form to qualities that normally occur anywhere. In the *American Journal of Psychology*, for January, 1904, the present writer, in support of this statemen', suggested a relational theory of consciousness in which the psychical in general is identified with the 'specious present,' which is the simplest or limiting case of memory.

possesses the concreteness of secondary qualities, and as such needs not to inhere in any mind in order to exist. On the other hand, if the physical world is void of all specific natures, and is only a regress of spatial and temporal relations, then it is not self-supporting, but must be regarded as parallel to or inherent in consciousness. Berkeley would never have dreamed of regarding the perceived world as a subjective state if he had not inherited from Locke and Descartes the mistaken inference that, in the case of the secondary qualities, relativity to the body implied dependence on the mind. He simply extended this inference with perfect consistency to the primary qualities, while his predecessor had applied it only to the secondary qualities.

If the world of concretely perceived facts is real, consciousness must be a relation between them. The realistic theory of the world and the relational theory of consciousness are, as we have already said, implied in each other. This recognition of the identity of the two theories will be slow in coming, for the reason that the relationists, from Mach to James, have been by sympathy and training idealists of one type or another, and they are naturally loth to recognize the incompatibility of their later conclusion that consciousness is a relation subsisting among objects with their earlier belief in consciousness as a substance in which objects must subsist. And yet the day may come when Mr. Russell's recent aphorism, that a truth no more depends on the knowing of it than an apple upon the eating of it, will be regarded, not as a paradox, but as a truism. If philosophy is to achieve any such deliverance from subjectivism, I think that it will be effected by the demands on the part of psychologists for a relational view of consciousness.[6]

W. P. MONTAGUE.

COLUMBIA UNIVERSITY.

[6] In order to bring together the various points of the paper I subjoin the following summary: Every object of study, except consciousness, has first been regarded as a substance, second, as a group of qualities, third, as a relation between other objects. The conceptions of consciousness, however, if we except the theories of Leibniz and Herbart, have generally alternated between the first and second of the methodological categories. Recently, several philosophers have independently suggested that the relational category should be applied in the study of consciousness as well as in the study of its objects, that the phenomenon of consciousness, of awareness, should be correlated with such relations between other phenomena as will best explain its function and its origin. The relational theory of consciousness, however, implies a realistic theory of sensible qualities, both primary and secondary. And, conversely, when once this realism is recognized, there is no temptation to relapse into either of the idealistic or non-relational conceptions of consciousness. This paper was written for the fourth meeting of the American Philosophical Association at Philadelphia, December, 1904.

A DEDUCTION OF THE LAW OF SYNTHESIS

THE first crucial problem of logic, upon the solution of which depends all further advance, is the determination of the law of thought whereby the form of judgment which is symbolized '*A* is *B*' is made possible. The traditional laws of thought—identity, contradiction and excluded middle—seem, on the face of them, to give no excuse for such a proposition; nay, they would appear rather to preclude its possibility. If '*A* is *A*,' and '*A* is not non-*A*,' and if *A* and non-*A* exhaust the universe of predication, there would seem to be no possible justification for predicating *B* of *A*. For either *B* is identical with *A*, in which case the proposition ought to be expressed in the form '*A* is *A*'; or *B* is not identical with *A*, in which case, being that which is not *A*, it falls into the class which, by the law of contradiction, is precluded from being made a predicate of *A*. Yet, notwithstanding the seeming impossibility of bringing the proposition '*A* is *B*' into conformity with the three laws, that proposition symbolizes our only fruitful mode of thought, the orthodox judgments '*A* is *A*' and '*A* is not non-*A*' being the expression of a process, if such it may be called, that in comparison is utterly barren.

The question then at once arises as to the adequacy of the traditional laws of thought. If '*A* is *B*' can not be justified in terms of the principles of identity, contradiction and excluded middle, must we conclude that the law which does give it legitimacy is one that is at complete variance with them—a law of synthesis, as the expression is, instead of their empty law of analysis? Or, on the contrary, may we find it possible, notwithstanding appearances, fruitfully to reduce this judgment to conformity with the traditional laws as these stand in their analytic statement? Or, finally, instead, on the one hand, of rejecting the three laws outright, or, on the other, of accepting them in their barren analytic character, may we find that, if we take note completely enough of the conditions of their expression, they are the real laws, not only of analysis, but of synthesis?

The second mode of solution has not been without its advocates. When the difficulty is pressed that *B* is not identical with *A*, and therefore can not rightly be predicated of it, these logicians would say that it is not the traditional laws that are at fault, but rather our formulation of the judgment. *B*, as sheer *B*, is, indeed, not identical with *A*; but, when we pronounce the judgment '*A* is *B*,' we do not mean that *A* is sheer *B*; rather do we mean that the *B* which is predicated is that *B* which belongs wholly to *A*; so that the proposition, rightly expressed, is '*A* is *AB*' (I make here no reference to the difficulties regarding the copula). Thus, taking the

judgment in intension, 'the rose is red' means, not 'the rose is redness in general,' but 'the rose is rose-red.' But though, by this qualification of the predicate, the proposition is brought more nearly into accord with the law of identity, it still does not fully satisfy the requirements of that law. As now stated, the proposition is not solely the expression of identity, but also of the relation of substance (or subject) and inherent attribute. The rose *has* rose-redness; it can not be said that the rose *is* rose-redness. But it is important to note that the law of identity, in itself, gives no warrant for the expression of substance-attribute inherence. While it is true that such inherence always involves identity, it is not true that identity, as purely such, involves substance-attribute inherence. Since, then, the law under consideration is solely a law of identity, it is operative only with regard to that category and can validate no such meaning of attributive relation as is expressed in the intensive meaning of the proposition '*A* is *AB*.' Hence, if the proposition 'the rose is rose-red' is to be made to accord fully with this law, it must be so transformed that it will express complete identity and nothing more. Thus it becomes 'the rose-red rose is the rose-red rose'; or, to symbolize, '*AB* is *AB*.'

But it may be denied that '*A* is *AB*' expresses attribute inherence. This can be done only on the assumption that propositions express solely *extension* and never intension. Thus, 'the rose is red' means 'the rose is red-thing,' and this being properly qualified (and consequently quantified) becomes 'the rose is rose-red-thing.' It is true that attribute inherence has here been eliminated from the propositional form; but it has been done at the cost of accepting an entirely erroneous theory of judgment. The assumption that judgments are to be taken only in extension is one that simply makes impossible any judgment at all. For if the subject is a 'thing' and the predicate a 'thing,' they are either different things or one identical thing. If they are different, we have, on the theory of pure extension, no means of passing from the one to the other in the manner of predication. They are two things, and they must ever remain two separate things. The judgment in intension, of course, closes the gap by claiming a 'universal' to be present in all difference of things. If, on the other hand, the subject and predicate are one identical thing, then obviously every proposition should be expressed 'this thing is this thing,' or '*AB* is *AB*.' But even this is not an adequate formulation, for if the 'this thing' of the predicate is different from the 'this thing' of the subject, the proposition is still not identical; while if the predicate is the identical thing that the subject is, the act of predicating the thing of itself can add no meaning to it, nay, is not even necessary to its self-identical meaning, as Boole himself showed in his

formulation of his 'Index Law.' Hence the proposition rightly reduces to the subject-concept 'this thing.'

Thus, whether we regard the judgment as properly to be taken in intension or in extension, the attempt to reduce it to accord with the law of analytic identity, either by qualifying or quantifying the predicate, inevitably commits it to the form '*AB* is *AB*.' And even this is more correctly to be expressed as the single concept *AB*.

I refrain from pointing out the sheer thought-suicide that is committed by this mode of reduction. That has been so effectively expressed by many logicians that nothing further need be added. I wish rather to call attention to a less noticed but equally serious difficulty involved in this manner of treatment. In reducing '*A* is *B*' to '*AB* is *AB*' (or '$AB = AB$'), we have, so far as the relation of *AB* to *AB* is concerned, a strict conformity to the law of identity. But (disregarding the inevitable further reduction to the form of a single concept) the question now arises, by what law of thought do we justify the expression of the subject and of the predicate as *AB*. The legitimacy of this complex-concept is always taken for granted. If, in *AB*, *A* and *B* are different from each other (which they must be unless we are willing to reduce *AB* to $AA = A$), they are *two* thought-elements united into a single concept. Hence we have in *AB* a conceptual conjunction of differences. It follows, then, that if *AB* is *one* thought or concept, we have a *one* that is at the same time a *two*. But if the one *is* the two, this goes directly counter to the law of contradiction. If, now, in order to bring the conjunction of differences into accord with this law, we hold that *AB* is not a one, or unity, in the same sense that it is a two, or diversity, we must express this, according to the law of identity, by saying that its unity is its unity, while its diversity is its diversity. But if, by its self-identical unity, we mean unity as entirely exclusive of diversity, such unity is perfectly meaningless. If, on the other hand, in order to save meaning, we admit that the self-identical unity is nevertheless a unity in diversity, then we simply push the problem back a step; and we still have on our hands the problem with which we began, of validating unity in diversity. Again, if, by the concept's self-identical diversity, we mean its *unified* diversity, the problem is likewise pushed back without solution. It remains, then, for us to regard the diversity as sheer diversity, *i. e.*, without unification. But the results of such a view are equally disastrous; for, as wholly non-unified, *AB* is simply the aggregate of *A* and *B;* in which case, the proposition '*AB* is *AB*' means rightly the two propositions '*A* is *A*' and '*B* is *B*.' It follows from this principle of reduction that wherever propositions predicate diversity, as in '*AB* is *AB*,' this must be understood simply as a shorthand expression for the addi-

tion of separate conceptual units. If, then, we expand the shorthand in order to make the content quite unequivocal, the true form of the proposition is a series of propositions, each one of which expresses the self-identity of *one undifferentiated component* of the aggregate-complex, the self-identity, that is, of a bare unit. Hence 'the rose-red rose is the rose-red rose' must properly reduce to 'rose is rose' and 'red is red.' Nay, 'rose' being itself a conceptual unity of complexity (and 'red' being so likewise), must be reduced to its items of pure simplicity. Here, then, we have, in logic, the disintegration of all thought into a sheer atomism. In the absurdity of such a result lies the real refutation of this mode of reducing propositions to the form of analytic identity.

It is true, indeed, that a concept is not a unity in the same sense that it is a diversity; yet this must not be taken to mean that unity absolutely is not diversity and that diversity absolutely is not unity. Unity *is* diversity; and it is exactly this affirmation of a predicate that is *different* from the subject that can not be brought into the straight-jacket of the analytic law of identity.

From this evident failure we turn again to the question how we may provide for the logical possibility of the proposition '*A* is *B*.' I think that the answer to this question will be found, not in a repudiation of the traditional laws of thought, but in the recognition that the law which makes '*A* is *B*' possible, is present as the very condition of the possibility of the traditional laws. This has indeed been well understood by the great synthetic logicians; and I am making no claim in this paper to the presentation of a new doctrine. I merely wish, by the help of a slightly different mode of symbolizing the traditional laws of thought, to express the law of synthesis as a direct *deduction* from the traditional laws. The ordinary mode of procedure has been to show the necessity of this law of conceptual synthesis on broad epistemological grounds, rather than to indicate the manner in which the law may be seen to grow out of the traditional laws and to become, indeed, their intrinsic expression. Such a direct 'deduction,' or drawing forth into explicitness of what is implicit in the traditional laws is, I think, possible with regard to the principle of synthetic thought.

In our ordinary negative propositions, the negation is made *with respect to something*. If I say, 'smells are not sounds,' the exclusion of sounds from smells is not absolute, but partial. Both smells and sounds are sensations; they differ *with respect to* their common sensational quality. Again, if I say, 'smells are not pianos,' the difference is obviously greater than in the former case. Yet it is not a complete difference as to their possession of reality: they are each real. Nor is it an absolute difference as to their possession of possibilities

for good or evil, or for giving pleasure or pain; for they both have such possibilities. Rather, having not only bare reality, but also, among others, the possibilities mentioned, they differ as to the manner in which they possess these. Hence the exclusion of predicate from subject is not absolute, but is one that is made within an identity that holds even in spite of the mutual exclusion.

If, now, we pass to the formula for complete exclusion, '*A* is not non-*A*,' may be we here likewise ask *in what respect* *A* and non-*A* differ? If they differ *in a respect,* then there is a 'something,' a generic quality, in which, or with reference to which, they differ. But this will mean that the difference is not sheer and absolute, but is grounded in an identity that holds notwithstanding the difference. Yet when we ask in what respect *A* differs from non-*A*, our first answer is, 'Wholly.' *A* is in nowise non-*A*, and non-*A* is in nowise *A*. This answer, however, at once shows itself to be an untrue statement of the negative relation involved. For as soon as we declare that *A* and non-*A* are *wholly* different, we admit that they are *not* wholly different in so far as they *agree* in the quality of mutual exclusion of the opposite. Agreeing in this character of mutual exclusion, they differ, indeed, as to the *manner* in which this generic quality is realized: *A* excludes non-*A*, and non-*A* excludes *A*. That is, the content of each exclusion is different, but its nature is in each the same. It is, indeed, just this *identity* of opposite-excluding character that makes possible the negative relation expressed by the law of contradiction.

This presence of identity in order to the expression of difference may perhaps more easily be seen by means of a less subtle reference. In whatever universe of discourse our formula, '*A* is not non-*A*,' may be employed, both terms will always, in some sense, be real. At the least, they will both be real as ideas. If our universe of discourse, for example, be such that *A* is taken to stand for existence, then non-*A* will signify non-existence. But non-existence, as an expression of opposition to existence, is not sheer unreality, for at any rate it is an ideal object of reference. But so, likewise, is existence an ideal object of reference. It is true, indeed, that existence is a 'something more,' which non-existence is not; but this 'something more' is simply the element of difference between the two. Existence and non-existence being each an ideal object of reference, they differ as to the manner in which their generic ideality is in each case specifically realized. Hence here again the difference is *with respect to* an identity. The mutual exclusion expressed by the formula of the law of contradiction differs from any of our concrete mutual exclusions only in that, in the latter, the definite generic identity is implied with more or less clearness; while, in the abstract

formula, that identity is still left almost utterly vague, with the possibility of assuming any definiteness that may be required by the concrete situations. Notwithstanding this, however, we are just as certain in the case of the abstract formula as in that of concrete propositions that ground of identity there must be where there is predication of difference.

A difficulty may perhaps be raised by noting the fact that in such a proposition as 'sounds are not smells' there is a doubt as to the ground of identity; for, if we use the form 'sounds are non-smells,' the identity would seem to be by no means the same as when we say 'sounds are not smells.' In the latter case, the ordinary interpretation would compare smells and sounds in their proximate class, sensations, exactly as when we say, 'red is not blue'; while in the former it would regard non-smells as comprising all of reality that is not smells. It is true that there is this difference in the possible grounds of identity; but it will easily be seen that the presence of this difference is rather an argument in justification of the position taken. It may be true that in the affirmative proposition with a negative predicate the only identity is 'reality' in its barest sense; nevertheless, even as such, it is the generic element which we have claimed to be necessary, the generic which has its specific realization even in mutual exclusives.

It follows, then, that the formula, '*A* is not non-*A*' does not exactly express its own real meaning. That formula does not (upon pain, if it does, of complete impotence) mean that *A* and non-*A* are absolutely excludent of each other; it means that, possessing some ground of identity, these two terms nevertheless differ in the manner in which they possess that identity. We may represent this identity present in all mutual exclusions by the symbol *U*. The law of contradiction, then, properly expressed, reads: '*AU* is not non-*AU*.'

If this be the real and indeed the only proper expression of the law of contradiction, our next step to the explicit statement of synthetic relation will not be difficult. By '*U*,' we have indicated the identity which both *A* and non-*A* are. It follows, then, that *A* is *U* and that non-*A* is *U*. But *A* is likewise *not U;* for if it were completely *U*, it would at the same time be non-*A*. Hence *A*, at once, is *U* and not *U*. If, remembering our analytic laws, we look suspiciously upon this result, we are now precluded from condemning it in terms of the law of contradiction, for we have just seen that this law presupposes these very conditions if it is to have any meaning whatever. Hence, with the law of contradiction itself the expression of this very seeming contradiction, we are forced, by the dialectic of the situation, to recognize that in such a relation of subject and predicate is expressed the fundamental nature of all thought.

If, now, (1) *A* is *U*, but (2) *A* is not *U*, we have in (1) the very form of synthetic proposition which we have been seeking to justify. *U* is predicated of *A*, but is nevertheless not completely identical with *A*. This is exactly the relation which we found expressed in the proposition '*A* is *B*,' and which the laws in their analytic form could not account for. Since the relations which they bear to *A* are the same, we may now legitimately substitute *B* for *U*. Thus the synthetic proposition has its justification. Indeed, it is now seen to be a correct, though unclear, formula for the real synthetic law of identity.

The three laws of thought will then be properly symbolized as follows:

Law of identity: *AU* is *AU*.

Law of contradiction: *AU* is not non-*AU*.

Law of excluded middle: Within the identity *U*, any subject of predication is either *A* or non-*A*.

It is true that in this formulation, the law of identity is still, by itself, an inadequate expression of the law of synthetic thought. Notwithstanding this, however, it does not in its present, as in its traditional form, succeed in hiding completely all traces of that synthetic law. For as now formulated, it contains the important symbol *AU*, which represents a *complex* concept. But such a concept, in so far as it is a unity that is likewise diversity, is the very typical form of synthetic thought. It was because purely analytic thought could provide for no such unity in manyness that we declared the traditional laws unable, on the face of them, to validate even such a proposition as '*AB* is *AB*.' Hence the form, '*AU* is *AU*,' which is analytic in its subject-predicate relation, exhibits the presence of synthetic thought in the form of its subject and its predicate terms.

The form '*AU* is *AU*' is especially inadequate, however, in that it fails, in the formulated relation between subject and predicate, to express the fact that all predication of identity may be made only as difference is likewise predicated. This, to be sure, as we have said, is implied in the presence of such a term as *AU*, but the truth is not made explicit by the exhibition of any difference between subject and predicate. Such predication of difference in the very act of predicating identity is expressed in the proposition '*A* is *B*'; but the formulation here is faulty, since it errs in the opposite way by explicitly stating difference and, except as implying it in the copula, allowing the identity to go unexpressed. Undoubtedly the truer formulation of this most usual and fruitful mode of thought is '*AU* is *BU*.'

The law of contradiction, also, as formulated above, is still by

itself an inadequate expression of the law of synthetic thought. It indeed makes clear, which was not true of the old formulation, the fact that difference, even if outright, is always in terms of identity; but like the law of identity, it fails to express the even more important truth, that all identity must be predicated in terms of difference.

In like manner, the law of excluded middle is still a one-sided expression of real thought. Yet in the present formulation it makes clear not only the fact expressed by the old form, that the world of predication is completely dichotomizable, and in so far systematic, but the further important fact that in being thus exhaustively divisible into two, it still maintains its oneness of generic being throughout the two divisions.

It has, indeed, often enough been agreed that the three laws of thought are each insufficient to express the whole truth about thought. We should not, however, permit them to be so inadequately formulated that they keep effectively concealed all trace of thought that is real and fruitful. With the symbolization just given, it seems to the writer that the truth of the laws in their old forms is preserved, while there is added to this truth of *analysis* the all-important truth of *synthesis*.

H. A. OVERSTREET.

UNIVERSITY OF CALIFORNIA.

DISCUSSION

THE REALISM OF PRAGMATISM

PROFESSOR COLVIN in his instructive article on Subjective Idealism and Psychology,[1] lets drop this significant remark: "It is an extremely fascinating doctrine, this radical subjectivism, which becomes solipsism when interpreted in terms of the intellect, *and pragmatism when formulated in the categories of the will.*" The words I have italicized are significant because, thrown in incidentally and not in an argument *pro* or *con* as to pragmatism, they reveal what seems to be the general assumption. Accordingly this may offer a fit and uncontroversial opportunity for making a somewhat personal and dogmatic *Auseinandersetzung*.

Speaking of the matter only for myself, the presuppositions and tendencies of pragmatism are distinctly realistic; not idealistic in any sense in which idealism connotes or is connoted by the theory of knowledge. (Idealistic in the ethical sense is another matter, and one whose associations with epistemological idealism, aside from the accidents of history, are chiefly verbal.) Pragma-

[1] "Is Subjective Idealism a Necessary Point of View for Psychology?" this JOURNAL, Vol. II., No. 9, April 27, 1905, p. 225.

tism believes that in knowledge as a fact, an accomplished matter, things are 'representative of one another,' to employ Woodbridge's happy, because correct, phrase.[2] Ideas, sensations, mental states, are, in their cognitive significance, media of so adjusting things to one another, that they *become* representative of one another. When this is accomplished, they drop out;[3] and things are present to the agent in the most naïvely realistic fashion. 'States of consciousness' refer to *getting* knowledge; to the situation when things as objective fail us; have, so to speak, gone back on us; when accordingly we neither have them to know nor yet to *know with*. It is in this situation, and only in this situation, that 'states of consciousness' exist or have meaning, cognitively speaking. And if I put in the phrase, 'cognitively speaking,' it is only to take account of the emotions; and with reference to the emotions the significant point is that they also arise and function in problematic situations; in situations whose objective determination or character is not known, not presented.

Instrumentalism is thus thoroughly realistic as to the objective or fulfilling conditions of knowledge. States of consciousness, sensations and ideas as cognitive, exist as tools, bridges, cues, functions —whatever one pleases—to affect a realistic presentation of things, in which there are no intervening states of consciousness as veils, or representatives. Known things, as known, are direct presentations in the most diaphanous medium conceivable. And if getting knowledge, as distinct from having it, involves representatives, pragmatism carries with it a reinterpretation, and a realistic interpretation, of 'states of consciousness' *as* representations. They are practically or effectively, not transcendentally, representative. They represent in the sense in which a signature, for legal purposes, represents a real person in a contract; or as money, for economic purposes, represents beefsteak or a night's lodging. They are symbols, in short, and are known and used as such.

Knowledge, even *getting* knowledge, must rest on facts, or things. But the need of truth, of cognitively assured things, means once more that such things are *not* present—just as the beefsteak is not eating, in the situation in which money stands for it. Things in problematic situations must operate through representatives, ministerial agents, through psychical things, which, *for the purpose in hand and for that only,* stand for and thus accomplish what things would accomplish—viz., mutually realistic significance—if they were only there. Psychical things are thus themselves real-

[2] See *Science,* N. S., Vol. XX., p. 587; and this JOURNAL, Vol. II., No. 5, March 2, 1905, p. 119.

[3] The sense in which their value remains will be spoken of later.

istically conceived; they can be described and identified in biological and physiological terms, in terms (with adequate science) of chemicophysical correspondents.[4] Psychologically, they are themselves literal emotions and felt impulses. Moreover, they are realistically conditioned from the genetic side. Their origin as existences can be stated and must be stated in terms of adjustments and maladjustments among habits, biological functions.[5] The reproach that has been brought against 'pragmatism' of utilizing biological evolutionary data, might, it would seem, at least have preserved it from the reproach of subjectivism.

In short, the point that the critics of pragmatism have missed with a surprising unanimity, is that in giving a reinterpretation of the nature and function of knowledge, pragmatism gives necessarily a thoroughgoing reinterpretation of all the cognitive machinery—sensations, ideas, concepts, etc.; one which inevitably tends to take these things in a much more literal and physically realistic fashion than is current. What pragmatism takes from idealism is just and only *empiricism*. That, to it, is the real lesson of the subjectivism which has held sway since the time of Descartes and Locke. This lesson learned, we can think freely and naïvely in terms of things—because things are no longer entities in a world set over against another world called 'mind' or 'consciousness,' with some sort of mysterious ontological tie between them. Again, pragmatism has learned that the true meaning of subjectivism is just *anti*-dualism. Hence philosophy can enter again into the realistic thought and conversation of common sense and science, where dualisms are just dualities, distinctions having an instrumental and practical, but not ultimate, metaphysical worth; or rather, having metaphysical worth in a practical and experimental sense, not in that of indicating a radical existential cleavage in the nature of things.

I speak only for myself, but in giving my hearty assent to what Professor James has said about the nature of truth (see this JOURNAL, p. 118, Vol. II.), I venture to express the hope that he also conceives the matter in some such way as I have suggested. Certainly it is the obvious deduction from his denial of the existence

[4] This possibility of objective statement is, I take it, the meaning of the psychophysical parallelism—if it has any meaning. There is no sense that I am aware of in which their description is to be limited to brain terms rather than to chemical terms, or to terms of changes among extra-organic objects, or to terms of changes among social objects, persons. The point is simply that psychical changes do correspond to changes in reality.

[5] Pragmatism would thus deny absolutely that psychology rests upon the idealistic presupposition. The psychologist has the same naïve right to things and bodies as has the geologist or zoologist.

of consciousness. It is the witness borne by Professor Mead in his *Definition of the Psychical.* It is what I had supposed to be the only possible outcome of my essays in the *Contributions to Logical Theory*—though I am glad to have this opportunity of expressing my indebtedness to conversations with Professor Woodbridge, as well as to his published articles, for making me aware of the full force of their realistic implications.

In conclusion, I wish to say a word upon the ethical idealism involved. Speaking from the cognitive standpoint, it is difficult to conceive of anything stranger, more curious, more wholly unanticipatable, than that certain things—emotions, sensations—which are biologically conditioned as to their origin, should become bearers of the transformation of things into things mutually representative or significant of one another. But such is the empirical fact. It demonstrates that while ideas, states of consciousness, drop out in our assured esthetic, intellectual and practical transactions with things, leaving a face-to-face or realistic situation, yet their worth, their value, remains in the significance which things have gained as representative of one another. *The increments of meaning which things are constantly taking on is as much the product of psychical existences, as the added significance of words is the result of their use in propositions, i. e., with a context.* They are the media of effecting the transformation of conflicting, unsatisfactory, and consequently fragmentarily significant situations, into situations where things are surely and reciprocally (in an all-around way) significant of one another. Hence the free, the indeterminate, the growing, the potential factor in reality. Meaning, significance is never just predetermined. It is always hanging upon the operation of the psychical, of the peculiarly individual. *Hence morality: the recognition of responsibility for the use of the psychical, as the ultimate determiner of the ways in which the world of all (you and me) who live among things grows in significance.* It is because the psychical is, cognitively, realistic, that morality has an empirically real sanction and yet an ideal bearing of infinite import. It never gets in the way of things of knowledge to obstruct or pervert; but its prior operations control what things become representative of one another, and hence the experienced meaning, or value, of those things.

JOHN DEWEY.

COLUMBIA UNIVERSITY.

REVIEWS AND ABSTRACTS OF LITERATURE

Bulletin de la société française de philosophie. March, 1905. 5 Année, No. 3. Esprit et matière. Thèse: M. Binet. Discussion: MM. Bergson, Darlu, J. Lachelier, Pécaut, Rauh.

M. Binet proposes to define matter and mind, and to present a theory of the connection between them. Reality exhibits two fundamental sorts of elements, sensations and the consciousness which accompanies sensations. The distinction between the physical and the psychical is replaced by the distinction between the object of consciousness and the act of consciousness. The sensational or content element which we find in images, emotions, effort, etc., is not to be regarded as the means by which we know the external world, it is the external world itself. Our sensations are the physical world. Mind is the activity of consciousness; it is not a thing, but a function. In itself, however, mind is incomplete: it requires an object or point of application, and this object is sensation or matter. Former theories of the relation of mind to body made the mistake of supposing that mind could exist more or less independently of body: spiritualism giving mind thorough independence, materialism making mind a product of the body, parallelism positing two coordinate series; whereas in fact mind and body are strictly correlative and inseparable.

The more intimate nature of the mind-body relation is as follows: Two facts which seem incompatible offer the chief difficulty. (*a*) Our thought is conditioned by a special intra-cerebral motion of molecules and atoms; (*b*) but this same thought has no consciousness of the molecular motion, is not directly aware of the nervous impulse. A molecular wave must reach a point in the visual cortex before we see the object in front of the eyes. How is it that consciousness ignores the physiological process upon which it depends, and, as it were, projects itself to the distant object? We must bear in mind that in this molecular wave is carried and implied all that we know of the external object which stimulates it. This nerve vibration represents the work of two factors, it expresses the nature of both the object which provokes it and the nervous apparatus which transmits. One of these factors which modify the nerve vibrations is constant, *i. e.*, the part played by the nervous system; the other is inconstant, varying with the changing external stimulus. We may conceive that consciousness, which maintains itself only in change, ignores the constant factor in the nervous vibration, and is cognizant only of the variable element. We are not, therefore, conscious of the constant presence of the cerebral mechanism, but only of the external object which introduces the element of variety. It is the physical world itself which is transmitted in the nervous system, and consciousness perceives it by the analysis of the nerve vibration.

The discussion of Binet's presentation opens upon the question of his fundamental division of reality. It is pointed out by M. Rauh that the distinction merely of content and activity of consciousness quite ignores

the concept of the unconscious. The unconscious is not to be explained as the subliminal, a mere mode of the conscious: it is both the known object and the knowing subject at the time when they are neither known nor knowing. M. Lachelier agrees that there is a mode of existence in which subject and object are not discriminated, but out of which they evolve. This state, however, is not the unconscious, a merely hypothetical condition, but is an 'affective mode,' a 'simple affection,' or 'state of simply living,' an actual known condition which we find persisting in all sensation, perception and thought. Further, certain kinds of sensations and perceptions are more objective than others. In differentiating the subject two sorts of experience are of greatest importance, (*a*) visual, (*b*) perception of resistance: an experience of taste, smell or even sound does not necessarily involve a subject distinct from the sensation, but the perception of a color-arrangement, which presupposes the ability to distinguish the contour of the different colors, implies a subject, or an activity whose unity is contrasted with the multiplicity of the colored surface. As to the perception of resistance, it is through the self's overcoming obstacles that the self becomes defined.

The discussion relative to Binet's theory of the union of mind and body is led by M. Bergson. Bergson takes exception to the idea that external perception occurs 'inside the brain'; he would localize it rather in the object perceived. If we ask, "how can I be in the object which I perceive?" he would reply "how can you be in the brain which perceives it?" The self is no more in the brain than in the object outside. The self exists virtually in everything perceptible, and actually in everything perceived. He says, with Leibnitz, that we have a confused perception of the entire universe, but a distinct perception only of that part of the universe upon which we can exercise an influence more or less immediate. If we ascribe to the physiological process more than the function of limiting practically our actions, *i. e.,* if we make it in any sense the cause of perception, we can not escape the hypothesis of psychophysical parallelism.

M. Darlu objects to the original standpoint of Binet's 'subjective phenomenalism.' By calling facts of consciousness physical, Binet is greatly altering current usage; for, in fixing arbitrarily the point where subjective and objective separate he is destroying the real meaning of the objective. In common speech, and still more in science, we call that the physical element of sensation which we recognize as most objective. The element is physical because it is more independent than all the rest of our will, because we are accustomed to measure it, to calculate upon it, to foresee it.

In the above thesis of M. Binet the points, that the content element of consciousness is for us external reality, that content and function are correlative inseparable aspects of consciousness, and that they constitute a distinction of prime importance, are statements highly interesting and comprehensible, but comprehensible only as giving a psychological standpoint. As a metaphysical theory of the connection between mind

and body 'subjective phenomenalism' contains difficulties. The dualism which M. Binet is trying to avoid appears in his own theory at the point where he ascribes to the central nervous system its peculiar function of carrier or supporter of the universe. Differences in nerve-vibration constitute the external world; but what then constitutes the vibrating nerve mass, unless matter and motion are the same? Consciousness discovers external reality by analyzing this molecular motion of the nerve-substance, but if different motions *are* the experience 'green,' 'blue,' 'sweet,' 'hard,' etc., where did we ever get the idea 'molecular motion' as a common substrate for them? What status has a cortical area when it is not functioning? What does it mean to say that consciousness analyzes the nerve-vibration? If everything is either content or act of consciousness, it would seem to mean either that we know the vibration immediately as content of consciousness—which Binet admits we do not, or, it means that the vibration is actually the activity of consciousness. On this latter hypothesis the act of consciousness is reduced to motion of the most materialistic variety.

Again, if act of consciousness and object of consciousness are to stand as the fundamental discrimination in reality, some theory of their correlation must be proposed, unless we are content to accept the Kantian dualism of the *a priori* and *a posteriori*.

The most suggestive contribution to a solution of these problems appears in the criticisms by M. Bergson. For him the subject, or the activity of knowing, is not localized in the brain any more than it is in the whole perceptible universe. What is localized is the practical response to perception. Solicitation to action seems the primal situation within which clear and distinct images emerge; on the other hand, the body, which is the chief instrument in action, is an image among other images or representations. Hence body and mind are interpretative of one another. If this be a just elaboration of M. Bergson's remarks it shows that his point of view is in harmony with other recent doctrines on the psychical-physical question. If one dare generalize, the tendency appears to be to identify the physical with the existential or mechanical aspect of reality, the psychical with the interpretative, teleological aspect. From the view-point of practical necessity the mechanical stands for the past, and the teleological for the future. Such a statement as the last accommodates the point brought forward by Darlu that the physical stands for the commensurable side of experience; for it is the past or accomplished fact which is the basis of calculation, and which is most independent of our will.

A striking omission from the discussions of the Société is the lack of any attempt to discriminate the psychological from the metaphysical standpoint. Indeed, the theory of subjective phenomenalism looks like an effort to erect the psychological attitude into the sole basis for metaphysics. The function of metaphysics would seem to many to include the correlation of the truths of all sciences rather than to adopt the postulates of any special one as final reality. It is out of different phases

of metaphysical inquiry that the special standpoints of different sciences have been generated. It becomes any science to cling to its limitations as its special opportunities, and psychology, having finally attained an individual status, would be better engaged in cherishing this golden egg than in bombarding with it the metaphysical goose that laid it.

KATE GORDON.

MOUNT HOLYOKE COLLEGE.

Experimentelle Beiträge zu einer Theorie des Denkens. HENRY J. WATT. *Archiv f. d. Gesamte Psychologie,* Band IV., Heft 3. Würzburg. Pp. 289–436.

This is a study of controlled association, a problem beset with many technical difficulties. Belonging to that class of problems whose practical approach is through the direct medium of speech, it is very dependent on the far from satisfactory methods of speech registration as yet available. The apparatus employed in this instance was of the usual form, including drop-screen, break-make relay, chronoscope and voice-key. The handling of this last instrument has been the Achilles' heel in much work done along these lines, nor, with all the careful handling of the remaining apparatus, do its limitations seem to have been fully taken into account. The promptitude with which this instrument registers the reaction varies considerably according to the phonological character of the initial of the reaction-word. A prompt break never occurs save with an initial explosive, and not always then. A more accurate and hardly less cumbersome form of apparatus would have been the Rosapelly laryngeal recorder, with a tambour for the breath stream of voiceless initials, recording on smoked paper.

The forms of association studied are: genus-species, species-genus, between coordinates, part-whole, whole-part, between parts of one whole. On the basis of the subjects' introspection three classes of reaction are noted. In class *A* there is a single movement from stimulus to reaction; and four subtypes are here distinguished, in which, between stimulus and reaction, there appears either a visual image, a word image, a vague hesitation, or nothing appreciable. The last mentioned, which is of rare occurrence, tends to be the shortest, but its other differentia are probably due to habits of imagery, so that it is doubtful whether it really forms a distinct type of association. In classes *B* and *C* the movement from stimulus to reaction is not single. In *B* the intervening element is highly indefinite, in *C* it is a definite object of an unsuccessful search. These tend to be longer than *A*, and *C* longer than *B*.

The proportion of mediate associations is very subject to individual difference, and also varies with the character of the control. A slight tendency to negative correlation in the number of the two types of mediate association seems to exist for all subjects. Phonetic lapses were frequently observed, and the phenomena of persistent association complicated the results to a slight extent. Throughout, however, the psychological limitations of the problem are only too apparent. The numbers of cases are necessarily small, and the mean variations large,

occasionally 30 per cent. of the average. Controlled association-time is eminently subject to individual differences in experience that can not be analyzed out objectively, and introspective evidence has but narrow limits of validity. The small number of words which it is possible to use as stimuli, and the large constant errors that are introduced if it is attempted to repeat them, constitute other grave difficulties. With whatever care experimental conditions may be observed, and with whatever fullness results are collated and presented, it does not seem probable that under present conditions the problems of controlled association offer other than negative results of value to experimental psychology.

F. L. WELLS.

COLUMBIA UNIVERSITY.

The Argument for Immortality. A. K. ROGERS. *International Journal of Ethics,* April, 1905. Pp. 323–338.

The motive of the article is to emphasize anew the importance of the idea of immortality for the moral and religious life in view of recent tendencies to assign it a place of but secondary importance. The exact meaning of the concept is not determined, the author confining himself wholly to a defense of its validity. No consideration is given to the argument from revelation, nor to that from spiritualistic phenomena; in the latter case, from the belief that 'the bad company which they keep must necessarily affect the reputation of such facts if not their character.' The metaphysical argument is recognized as invalidated by the passing of the old idea of a soul substance, and the conclusions of science are shown to be wholly negative with reference to the idea. The moral argument is the only effective one. The older form of this, in which the demand is made that happiness be proportioned to virtue, does not necessarily imply the bribe theory of goodness, but only our demand that reality recognize our moral judgments. And 'can virtue stand justified to our minds, except as it does find that external confirmation which immortality tries to postulate?' But, granted that the ethical life must be objectively vindicated, does this imply the stability of the individual life, or is the progress of the race sufficient for the purpose? Moral values are grounded in the relationship of persons and may be said to culminate in love. And 'in its inmost heart love is a relationship which does not stop with those universal qualities of a man which make him simply an actor in the world history. It clings to the very core of individuality itself, and will be satisfied with just this as a living and continuous person, whose place no one else can wholly take.' The demand for immortality is thus not a selfish one, but is the demand that the person whom we love be immortal. And, if we express the nature of God by love, 'could we really respect a God for whom love, or fellowship, meant merely a temporary or passing phase of his experience, whose object was called into existence only to be dismissed again from the scene?'

NORMAN WILDE.

UNIVERSITY OF MINNESOTA.

JOURNALS AND NEW BOOKS

AMERICAN JOURNAL OF PSYCHOLOGY. April, 1905. *A Study of Precocity and Prematuration* (pp. 145–183): LEWIS M. TERMAN. – This is a descriptive study tending to show some of the manifestations and tendencies of early maturity of bodily and mental functions. Especially emphasized is the baneful and retarding influence in mature efficiency of the too early manifestation of sexual feelings, nervousness, overeducation, and religious convictions, and also the relation of these to criminology in the earlier years. *Anent Psychophysical Parallelism* (pp. 184–189): EDMOND MONTGOMERY. – The author arrives at the duality of the world idea by being compelled to interpret as different another's consciousness and that consciousness as conceiving some external object. Also the significance of this for psychology and epistemology is stated. *Song and Call Notes of English Sparrows when Reared by Canaries* (pp. 190–198): EDWARD CONRADI. – An experimental study. Two young sparrows were placed, before they had learned any of the calls of sparrows, in a cage with some canaries. At first they used the sparrow calls, but soon forgot these and learned the call notes of the canaries with whom they were associated, as well as some of their songs. On again being placed with sparrows, however, they soon returned to the language of sparrows. *Eye Movements* (pp. 199–207): BERNICE BARNES. – Some experiments to test the validity of Listing's and Donder's laws. The same degree of torsion was found whether the eye moved across the field diagonally, or when passing from the primary to a secondary and then across to the point. Donder's law was found to hold, though there was not the slightest evidence of Listing's law. *The Problems of Experimental Psychology* (pp. 208–227): E. B. TITCHNER.–The address given before the congress of Arts and Sciences at St. Louis and previously published in one of the November numbers of *Science*. *Experimental Psychology in Italy* (pp. 225–227): G. E. FERRARI. – The writer corrects some impressions given in an article on the same subject by a fellow countryman, and published in the *American Journal of Psychology* for October. *Proof and Disproof of Correlation* (pp. 228–231): C. SPEARMAN. – This is an answer to some criticisms of the author's statements and methods of correlation. He especially attempts to show that roughness in measurement can not disprove a positive correlation, though it may a negative result. *The Significance of the Human Hand in the Evolution of the Mind* (pp. 232–242): ROBERT MACDOUGAL. – An attempt is made to show that since the hand is fundamentally an organ of expression, its mechanical, tactual, perceptual limitations imply a concomitant narrowness in the mental realm.

REVUE DE METAPHYSIQUE ET DE MORALE. March, 1905. *Définitions fondamentales (Vocabulaire logiquement ordonné des idées les plus générales et les plus abstraites)* (pp. 153–192): SULLY PRUDHOMME. – An attempt to give definitions which can be used as standard in philosophic discussions. About seventy concepts are defined, such as *being, nothing, existence, thing, function, condition, difference, substance. Sur*

la logique de l'invention (pp. 193–223): E. LE ROY. – Invention rises from the dark, and contradictory in the mind; needs no rules of methods, even defies the laws of logic. The virtues of contemplative thought are the vices of creative thought. Invention is helped by cultivating respect for images and reactions; such is the spirit of the *philosophic nouvelle. Les principes des mathématiques* (pp. 224–256): L. COUTURAT. – According to Dr. Veblen's system, descriptive geometry is based on two concepts (the point and the relation of order between three points) and twelve axioms. These define a categorical, not a disjunctive, system. Metrical geometry demands also the concept of size. Pure geometry uses points not as being spatial positions, but as abstract terms which enter into certain ordinal relations. It is not the science of real space, but a branch of the logic of relations. Applied geometry is an experimental science. *Études critiques: Myers, La théorie du subliminal* (pp. 257–282): H. DELACROIX. – Telepathy is far from being established. Experimental metaphysics is essentially chimerical. Spirit or soul is a transcendental concept, and could not in any case be proved empirically. *Une nouvelle tentative de réfutation de la géométrie générale* (pp. 283–290): E. DELSOL. – Answer to M. Techalas' various criticisms of the above work of M. Delsol. Livres nouveaux. Thèses de doctorat.

ARCHIV FÜR SYSTEMATISCHE PHILOSOPHIE. February, 1905. Band XI., Heft 1. *Über Notwendigkeit, Wirklichkeit, Möglichkeit und die Grundlagen der Mathematik* (pp. 1–26): K. GESSLER. – The necessity of mathematical, as compared with naturalistic demonstrations depends upon the relative ease and simplicity of the chain of propositions leading to certain empirical facts. The *existence* of these latter facts is a complex question, calling for gifts not essentially mathematical. Examples are the existence of limits, of cardinal numbers (Cantor), and the 'possibility' of certain processes and equations. *Bewusstsein und Wirklichkeit* (pp. 27–45): A. GUREWITSCH. – Consciousness is perception, thought, feeling, will; reality is nature, life and history. With regard to these two fundamental concepts eighteen others may be asserted, such that were any one of these taken as the point of inquiry consciousness and reality would in turn appear as in like manner predicable of that. *De Lege Motus* (pp. 47–60): B. LEMCKE. – Any motion once begun can never cease. Rest, as the lack of motion, is never perceived; while to imagination it appears as the terminus of decreasing motion, to reason it is the limit of such a motion and never comes to existence. *Der energetische Mutualismus* (pp. 61–85): F. G. MARENZI. – Energetics is the all-embracing science, and as a metaphysics substitutes a *mutualism* for a monism everywhere. For example, God would be known of man, man would know God. *Theistic Idealism* (pp. 86–104): J. LINDSAY. – Idealism is, no doubt, the philosophy destined to prevail; but not the Hegel-Royce type, that makes our consciousness a part of God's, or God the mere ideal of man. God's immanence must consist with his absolute character. *Jahresbericht; La philosophie en France* (pp. 107–120): C. BOS. – Special attention is given to Stirner's

'L'individualism anarchique,' and A. Levy's 'La philosophie de Feuerbach.' *Neueste Erscheinungen.*

VIERTELJAHRSCHRIFT FÜR WISSENSCHAFTLICHE PHILOSOPHIE UND SOCIOLOGIE. *Atomistik und Energetik vom Standpunkte ökonomischer Naturbetrachtung* (pp. 1–25): H. WOLFE. – In this epistemological essay it is maintained that while in the molecular theory full justice is done to the individuality (*i. e.*, the ultimate uniqueness) of bodies, in the theory of energetics that is not the case. Two types of energetics. *Die Grundlagen des naturlichen Monismus bei Karl Christian Plank* (pp. 28–66): H. PLANCK. – Planck, like Spencer, held that only growth, not existence, can be described, that it has but two characters, attraction and repulsion, exemplified here in sensation and in pure thought. Conclusion follows. *Die Gliederung der Gesellschaft bei Schleiermacher* (pp. 67–110): G. STOSCH. – The philosophical service of Schleiermacher is to have grasped in vital fashion the secret of individuality, that each man expresses the universe in a particular manner. Antiquated though his method of classification is, yet the inductive method can not dispense with such speculations as his. *Besprechungen, Duplik:* H. SPITZER. *Zu neuerlicher Abwehr:* S. WITASEK. W. Windelband, *Lehrbuch der Geschichte der Philosophie:* W. REGLER. H. Orestano, *Le idee fundamentali di Federigo Nietzsche nel loro progressivi svolgimento:* H. MÖLLER. B. Russell, *The Principles of Mathematics:* F. HAUSDORFF. *Philosophische Zeitschriften.*

Baird, J. W. *The Color Sensitivity of the Peripheral Retina.* Washington, D. C.: The Carnegie Institution. 1905. 80 pp.

Joel, Karl. *Nietzsche und die Romantik.* Jena und Leipzig: Diederichs. 1905. 8vo. 366 pp. 9 M.

Kleinpeter, H. *Die Erkenntnistheorie der Naturforschung der Genenwart. Unter Zugrundelegung der Anschauungen von Mach, Stallo, Clifford, Kirchhoff, Hertz, Pearson, und Ostwald.* Leipzig: Barth. 1905. 8vo. 156 pp. 3.80 M.

Motora, Y. *An Essay on Eastern Philosophy.* Leipzig: R. Voigtlander. 1905. 8vo. 32 pp. 0.80 M.

Princeton Contributions to Philosophy. Edited by Alexander T. Ormond. Vol. I. No. 4. April, 1905. *Metaphysical Elements in Sociology,* by Philip H. Fogel. 56 pp.

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Ruyssen, T. *Essai sur l'evolution psychologique du jugment.* Paris: Alcan. 1904. 8vo. 380 pp. 5 fr.

Thilo, C. A. *Fr. H. Jacobis Religionsphilosophie.* Langensalza: Beyer & Söhne. 1905. 8vo. 54 pp. 1.20 M.

Thilo, C. A. *Kant's Religionsphilosophie.* Langensalza: Beyer & Söhne. 1905. 8vo. 65 pp. 1.20 M.

Ueberwig-Heinze. *Geschichte der Philosophie.* Neunte Auflage. Bd. II. *Mittelalter.* Berlin: Mittler und Sohn. 1905. 8vo. 403 pp. 8.50 M.

University of Iowa Studies in Psychology. Edited by Carl Emil Seashore. Psychological Review, Monograph Supplements, March, 1905. Contents: *Perimetry of the Localization of Sound,* by Daniel Stark, 45 pp.; *Periodicity and Progressive Change in Continuous Mental Work,* by C. E. Seashore and Grace Helen Kent, 56 pp.; *A Case of Vision Acquired in Adult-Life,* by J. Burt Miner. 16 pp.

NOTES AND NEWS

THE University of California has issued the following announcement regarding its publications in philosophy: "The University of California Publications in Philosophy are planned to contain constructive and critical investigations in the whole field of Philosophy, including its several departments of Psychology, Observational, Experimental, and Rational; Logic and the Theory of Knowledge; Metaphysics; Ethics; the Philosophy of Religion; the History of Philosophy; Political Philosophy and the Philosophy of History; and Cosmology, or the Philosophy of Nature. They will consist of writings by the Staff of the Department of Philosophy, by its graduates, by its actual students, or by others whom the Department may invite, and will be under the editorial supervision of the head of the Department, Professor G. H. Howison. The first volume, under special editorship, has just appeared. It is in the form of a *Festschrift,* dedicated to Professor Howison on the occasion of his seventieth birthday, and contains papers by twelve graduates of the Department, on various philosophical problems. The second volume is now in progress and will be published in separate numbers. The first number will consist of two essays by Professor Howison, on "The Place of Philosophy in the Field of Knowledge," and will be principally concerned with a systematic inquiry into the Conceptions Fundamental to Philosophy and into its Methods. The numbers will appear at irregular intervals, and each volume, when complete, will contain approximately 300 pages. The subscription price is $2.00 per volume."

IN accordance with the tutorial system adopted by Princeton University, perceptors with the grade of assistant professor have been appointed in the department of philosophy and psychology as follows: Professor R. B. Johnson of Miami University, Dr. Adam Leroy Jones of Columbia University, Professor W. T. Marvin of Western Reserve University, Dr. Wilmon H. Sheldon of Columbia University, and Dr. E. G. Spaulding of the College of the City of New York.

THE seventieth birthday of Professor Caesar Lombroso will be celebrated in connection with the Sixth International Congress of Criminology, which meets at Turin next year.

DR. E. B. HOLT has been advanced to the position of assistant professor of psychology at Harvard University.

DR. J. CARLTON BELL has been appointed instructor in experimental psychology in Wellesley College.